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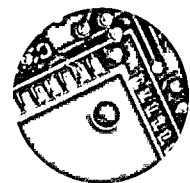
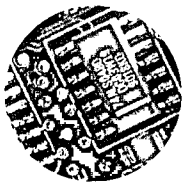
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ELECTRONICS ENGINEERING DICTIONARY



STEVEN M. KAPLAN

WILEY ELECTRICAL AND ELECTRONICS ENGINEERING DICTIONARY

Steven M. Kaplan
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set many system parameters, such as keyboard and mouse characteristics, monitor resolution, and printer settings. Also called **control panel program**.

control panel program Same as **control panel (2)**.

control parallel A computer architecture in which multiple processors simultaneously and independently execute different instructions on different sets of data. Also called **multiple instruction stream-multiple data stream**.

control point In an automatic control system, the target value towards which the system makes adjustments. In the case of a thermostat, for instance, it would be a given temperature.

control processor A processor used in a control system.

control program A program which controls the operations of a computer, performing tasks such as managing system resources. An operating system is an example of such a program.

control register In a CPU, a register that contains the address of the location in memory that is to be accessed by the next instruction. May also refer to the address of the current instruction. Also called by various other names, including **control counter**, **current-instruction register**, **program counter**, **program register**, **instruction register**, **instruction counter**, and **sequence register**.

control rod A material utilized to control the reactivity of a nuclear reactor by absorbing neutrons. Examples include gadolinium, boron, and europium.

control room A room which houses the necessary devices and equipment to monitor and control a facility such as a TV recording studio or a nuclear power plant.

control sequence The order in which computer instructions are executed. For instance, the sequence followed while performing a given task.

control signal 1. A signal utilized to control a device or process. In a computer, for instance, such a signal may be an interrupt request. 2. In telecommunications, a signal that transmits control information. For example, a customer picks up a telephone receiver, hears a dial tone, dials a sequence of digits, and then gets a busy signal. All the tones heard are control signals.

control statement 1. A computer statement which controls the flow of execution of a program. For instance, an IF-THEN statement. 2. Same as **control instruction**.

control station Within a communications network, the station that manages all operations, such as the orderly flow of traffic.

control system A system utilized to maintain one or more output quantities within specified parameters. In a closed-loop control system, a feedback signal is incorporated for this purpose, while in an open-loop control system there is no such feedback. The components of a control system may be electrical, mechanical, thermal, and so on.

control total A total, composed of several numbers taken from a file, which is calculated before, during, and after processing. The numbers utilized to calculate the total do not necessarily have to be taken from numeric data. Control totals are used to verify the accuracy of processed data, or to help ensure that transmitted messages have not been tampered with. At all stages the calculated totals must match, otherwise there is an error. Also called **hash total**.

control track A track on a recordable magnetic medium, such as a tape or a disk, containing control signals such as tape playback speed.

control transformer A transformer utilized to supply a control device.

control unit 1. In a computer, circuitry that performs control functions such as sending control signals, interpreting program instructions, handling peripherals, or managing access

to memory locations. 2. A unit which controls a given mechanism, piece of equipment, function, process, or system.

control winding A winding that carries a current that controls the output of a machine.

control word A computer word which stores information used for a control function.

controlled-avalanche device A semiconductor device with precisely defined avalanche voltage characteristics. Such devices can absorb repeated momentary power surges without damage.

controlled-avalanche diode A semiconductor diode with precisely defined avalanche voltage characteristics. Such diodes can absorb repeated momentary power surges without damage, and can be used, for instance, for surge suppression.

controlled-carrier modulation A type of amplitude modulation in which the amplitude of the carrier wave is varied according to the percentage of modulation, providing for an essentially constant modulation factor. Also called **floating-carrier modulation**, or **variable-carrier modulation**.

controlled environment An enclosure, such as a room, in which measures are taken to provide an environment that meets certain requirements, such as maintaining a specified level of temperature and/or humidity, guarding against static electricity or electromagnetic radiation, or isolating from dust. Such environments may be used, for instance, for testing, or to protect sensitive electronic equipment.

controlled-path robot A robot whose movements are dictated by a **controlled-path system**.

controlled-path system A computer control system in which a path of movement is numerically described. Used, for instance, in robotics.

controlled rectifier A rectifier, such as a silicon-controlled rectifier, whose output current may be regulated.

controller 1. A circuit board or device which controls the way peripheral devices access the computer, and vice versa. It is usually contained on a single chip. Examples include disk controllers, graphics controllers, and video controllers. Also called **peripheral controller**, or **host adapter**. 2. A signal, circuit, device, or system which controls any given mechanism, function, process, or piece of equipment. An example is an infrared remote control for electronic equipment. 3. A circuit, mechanism, device, or system, which monitors one or more variables, and automatically makes the necessary adjustments in order to maintain operation within the specified parameters. Also known as **automatic controller**. 4. The computer and programs which control a robot. Also called **controller system**, or **robot controller**.

controller card A circuit board which controls the way peripheral devices access the computer, and vice versa. Examples include disk controllers, graphics controllers, and SCSI controllers.

controller system 1. A system which monitors one or more variables, and automatically makes the necessary adjustments, in order to maintain operation within the specified parameters. 2. Same as **controller (4)**.

convection The transmission of energy or matter through a medium, which is itself moved. For instance, in convection cooling, the air transferring the heat moves along with the heat. This contrasts with **conduction**, where the medium itself is not moved as a whole, and with **radiation**, where waves or particles are emitted.

convection cooling A process by which an object transfers heat to the surrounding air. The heated air is less dense, hence moving upward so that cooler air is then available for further cooling. Used, for instance, to cool components which generate heat, such as transistors.

instantaneous automatic volume control Same as **instantaneous automatic gain control**. Its abbreviation is **IAVC**.

instantaneous companding Companding in which the variations are made in response to the instantaneous value of a signal.

instantaneous condition The condition of a dynamic system at a specified moment in time.

instantaneous contacts Contacts, such as those of a timer, which are actuated the instant the driving signal is applied.

instantaneous current The value of a varying current, such as AC, at a particular instant within a cycle. Also called **instantaneous current value**.

instantaneous current value Same as **instantaneous current**.

instantaneous effect Any effect resulting from instantaneous changes in parameters such as amplitude, power, frequency, or impedance. An example is a failure which may occur due to a current surge.

instantaneous frequency 1. The frequency of a signal at a specified moment in time. 2. The time rate of change of a phase angle of a wave divided by 2π .

instantaneous magnitude 1. The magnitude of a varying quantity, such as a current or voltage, at a specified moment in time. 2. The magnitude of a signal at a specified moment in time.

instantaneous power The rate at which power is delivered to a load at a specified moment in time. Also called **instantaneous power output**.

instantaneous power output Same as **instantaneous power**.

instantaneous relay A relay which is actuated the instant the driving signal is applied.

instantaneous sample An individual measurement obtained during **instantaneous sampling**.

instantaneous sampling Sampling in which instantaneous values of a signal or wave are measured.

instantaneous sound pressure The sound pressure at a given point, at a specified moment in time. Used, for instance, to monitor impact noises.

instantaneous switch A switch that is actuated the instant the driving signal is applied.

instantaneous value The value of a varying quantity, such as current or voltage, at a specified moment in time.

instantaneous voltage The value of a varying voltage, such as alternating voltage, at a particular instant within a cycle. Also called **instantaneous voltage value**.

instantaneous voltage value Same as **instantaneous voltage**.

instantiate In object-oriented programming, the creation of an instance (3).

Institute of Electrical and Electronics Engineers Same as **IEEE**.

instruction 1. A command or statement in a computer program or routine. Also called **computer instruction** (1). 2. A computer instruction in machine code. Such an instruction can be directly executed by a processor. Also called **machine instruction**, or **computer instruction** (2).

instruction address An address indicating the location of a computer instruction.

instruction address register 1. A register which holds the address of the instruction which is next to be executed while running a program. 2. Same as **instruction register**.

instruction code A coded value or bit string within a machine instruction which specifies the operation to be performed by a processor. The operation may be a branch, add, copy, and so on. Also called **operation code**, or **opcode**.

instruction counter Same as **instruction register**.

instruction cycle The time interval during which an instruction is fetched from memory, decoded, and executed.

instruction fetch To locate an instruction in computer memory and load it into a CPU register. Once an instruction is fetched, it can then be executed. Also called **fetch**.

instruction format The components and layout of an instruction.

instruction mix The different types of instructions contained in a program. For example, I/O instructions, or control instructions.

instruction modification A change in an instruction that results in a different operation being performed when the same instruction is executed the next time.

instruction pointer Same as **instruction register**.

instruction register In a CPU, a register that contains the address of the location in memory that is to be accessed by the next instruction. May also refer to the address of the current instruction. Also called by various other terms, including **instruction counter**, **instruction address register**, **instruction pointer**, **control register**, **program counter**, **program register**, and **sequence register**.

instruction set The complete set of machine instructions that a CPU can recognize and execute.

instruction time 1. The time required for an instruction to be fetched from memory. It is the first part of an instruction cycle. 2. The time required to execute an instruction.

instruction word A computer word containing an instruction.

instrument Its abbreviation is **inst**. 1. A device utilized to directly or indirectly measure, indicate, and/or monitor the value of an observed and/or controlled quantity. Such an instrument may also record these variations. There are many examples, including altimeters, ammeters, bridges, circuit analyzers, compasses, digital multimeters, frequency meters, oscilloscopes, and spectrometers. Also called **measurement instrument**. 2. A device which enables the playing or production of music. For instance, an electric guitar or piano. 3. That which is dependent on one or more **instruments** (1). For example, **instrument flying**.

instrument accuracy The extent to which a value indicated by an instrument approximates the real value.

instrument amplifier Same as **instrumentation amplifier**.

instrument approach A landing approach utilizing an **instrument approach system**.

instrument approach system A radio navigation system which provides an aircraft with the information necessary for a safe approach. This includes indications of lateral, longitudinal, and vertical guidance during descent from a given altitude, until reaching a point where a landing can be completed.

instrument damping The reduction or limiting of the amplitude of movement of the indicator of an instrument, such as a galvanometer or volume meter, to minimize oscillation or overshoot. An instrument whose damping is sufficient for it to proceed from one reading to the next without oscillating or overshooting is called **deadbeat instrument**.

instrument error Same as **instrumental error**.

instrument flight Same as **instrument flying**.

instrument flying The flying of an aircraft relying solely on the instrumentation and communications. This usually necessary when visibility is inadequate. Also called **instrument flight**, or **blind flying**.

instrument housing A housing which encloses, supports, and protects an instrument.

instrument lamp Same as **instrument light**.

instrument landing The landing of an aircraft relying solely on instrumentation and communications. This usually nec-